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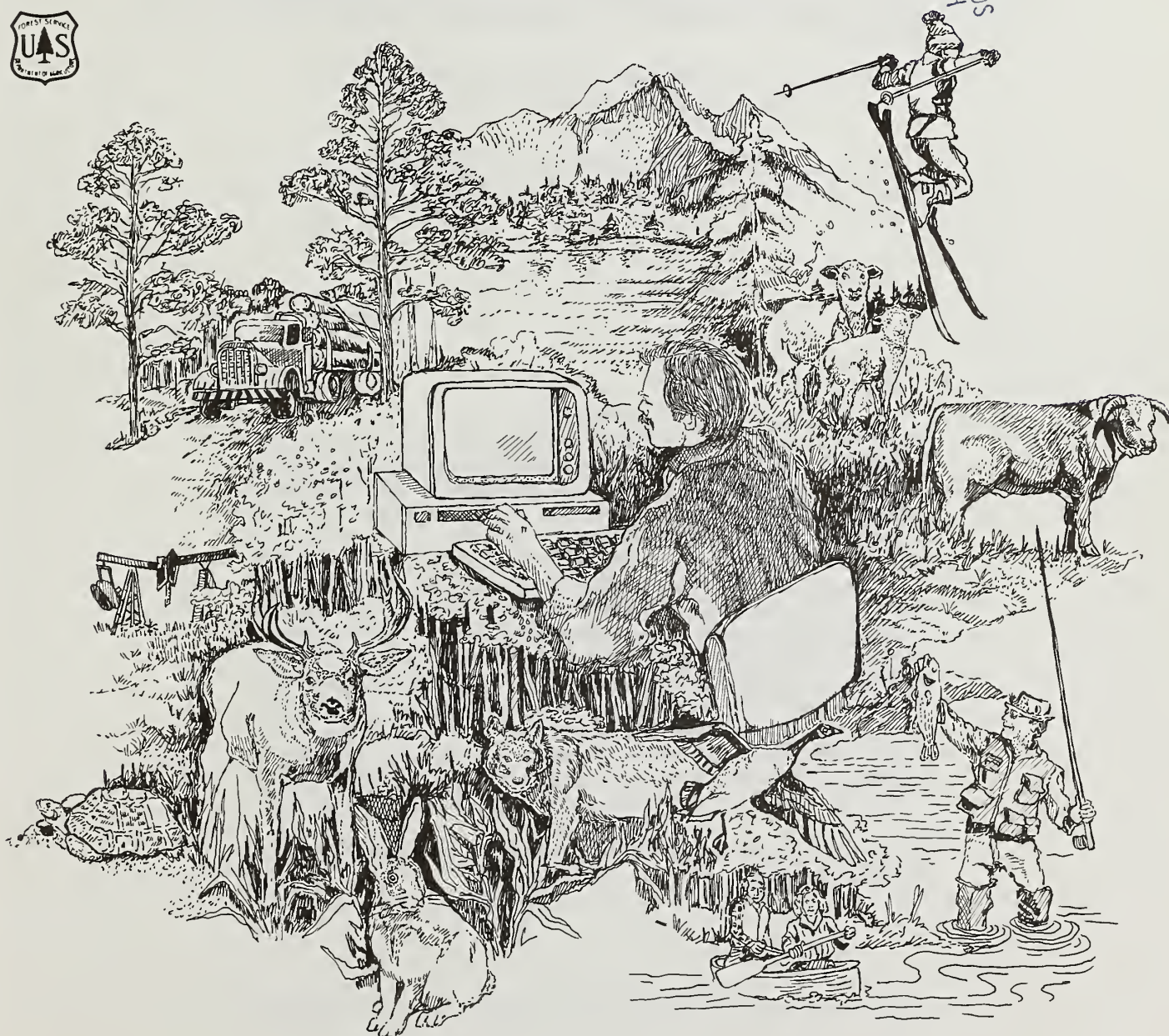
General Technical  
Report RM-170



# Review of Critiques of the USDA Forest Service Land Management Planning Process

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## ACKNOWLEDGMENTS

The authors acknowledge the assistance provided by Mike Prouty and Dave Kapaldo, USDA Forest Service, Washington Office Policy Analysis Staff, in obtaining relevant review materials, and the careful review of the manuscript and helpful comments by Denny Schweitzer, USDA Forest Service, Washington Office; Dave Iverson, USDA Forest Service, Region 4; and Dennis Teegarden, University of California, Berkeley.

Baltic, Tony J.; Hof, John G.; Kent, Brian M. 1989. Review of critiques of the USDA Forest Service land management planning process. General Technical Report RM-170. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Forest and Range Experiment Station. 15 p.

This report reviews a sampling of the literature evaluating the USDA Forest Service land management planning process. The Forest Service planning process and what constitutes an evaluation or critique of this process are defined. Relevant critiques are then reviewed individually by interest group category. The reviews, which are structured to provide insight as to the most common themes, conclusions, recommendations, and methodologies, lead us to conclude that a diversity of views dominates while consensus is limited. Perhaps the only consensus identifiable at this time is that the planning process includes a strong political element that has not been adequately considered.

**Keywords:** land management planning, forest planning, FORPLAN, planning process.



# **Review of Critiques of the USDA Forest Service Land Management Planning Process**

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## **Abstract**

This report reviews a sampling of the literature evaluating the USDA Forest Service land management planning process. The Forest Service planning process and what constitutes an evaluation or critique of this process are defined. Relevant critiques are then reviewed individually by interest group category. The reviews, which are structured to provide insight as to the most common themes, conclusions, recommendations, and methodologies, lead us to conclude that a diversity of views dominates while consensus is limited. Perhaps the only consensus identifiable at this time is that the planning process includes a strong political element that has not been adequately considered.

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# Review of Critiques of the USDA Forest Service Land Management Planning Process

Tony J. Baltic, John G. Hof, and Brian M. Kent

## Introduction

In "the first major forest policy forum" (LeMaster and Popovich 1977), convened soon after passage of the National Forest Management Act of 1976 (NFMA) which amended the Forest and Rangeland Renewable Resources Planning Act of 1974 (RPA), participants generally agreed that congressional policy direction for federal forest management was inadequate prior to NFMA. While there was less consensus as to the scope of direction needed, it was judged premature to evaluate the impacts of NFMA or to offer any solutions. John R. McGuire (1982), Chief of the Forest Service when NFMA became law, described the direction mandated by NFMA as a "trial process" authorized by Congress in the hope that it would satisfactorily answer the question of what to do with the national forests. He suggested that this question will require lengthy debate because the directives in NFMA involve planning "processes that in past years were never attempted or processes that have never passed beyond concept into practice."

The debate has begun, as witnessed by the preparation of numerous analyses and critiques concerning various aspects of the Forest Service's land management planning process. However, there has been no comprehensive internal Forest Service evaluation of the process to assess its overall performance and determine if any changes are needed. The Forest Service has now essentially completed an initial round of the planning process and is about to undertake such an assessment to prepare for the next round of planning. The objective of this literature review is to summarize past critiques of the Forest Service's land management planning process so as to provide input into the upcoming Forest Service critique.<sup>2</sup>

The land management planning process is defined by the

- legislation that interprets and codifies the original intent of RPA and NFMA
- regulations that transform the original intent defined in the legislation into planning steps for developing, adopting, and revising land and resource management plans for the National Forest System
- internal guidelines and directives that further clarify the intent and regulations to facilitate plan development at the forest level.

A critique might include evaluation of (1) how effectively the land management planning process transformed the original intent of NFMA into clear

components that could serve as guidelines for implementation; (2) how effectively and efficiently these components facilitated the production of forest plans; and (3) how useful the completed forest plans were as management tools for the implementation of the original intent of NFMA by line officers and resource specialists on the ground. The critical examination of any single issue that has, through the planning experience so far, proven to be controversial and the subject of substantial debate also constitutes a critique.<sup>3</sup>

Relevant critiques, which were reviewed individually, are categorized by Forest Service public (interest group).<sup>4</sup> The reviews are structured to answer the following basic questions:

- who—identity of specific public or individual who did the critique
- why—purpose or focus of the critique
- how—the methodology used
- what—conclusions and recommendations.

The discussion of methodology includes such aspects as whether the critique was subjective or objective; description of analytics, empirics, and evaluation criteria; and source and quality of data and facts.

Because of the broad definition of what constitutes a critique and the detail required to meet the review objective, the literature review is limited to a sampling from the range of all past critique efforts. The Literature Cited section references the critiques reviewed in this report.

## Review of Critiques

### Conservationist, Environmentalist, and Preservationist Groups

The Wilderness Society (1987) prepared a critique it termed "the first attempt at a nationwide analysis of the Forest Service plans." The Society is a nonprofit, membership organization dedicated to the advocacy of wilderness values and an American land ethic. The focus of the Society's analysis is on the results of the planning process as outlined in the completed forest plans. The

<sup>3</sup>For example, the issue of below-cost timber sales, although not directly referred to in the law or regulations, is indirectly related to the planning process primarily through the economic efficiency provisions of Part 219.14 of the regulations (timber resource land suitability), and it also has implications for other components as well. Below-cost sales have proven to be a major concern in the planning and management on National Forest System lands, and assessments concerning this issue, therefore, constitute a critique for purposes of this literature review.

<sup>4</sup>Separate critiques by the same individuals or by representatives of the same group or organization may be combined into a single review.

<sup>2</sup>This paper reviews critiques from the available literature. The review of administrative appeals of forest plans is beyond the scope of this document.



critique raises no questions concerning procedural matters. Primary issues of concern are logging and road construction levels, below-cost timber sales, environmental protection and resource stewardship, and wildlands protection. The critique questions the usefulness of the completed forest plans and expresses major concerns about the internal guidelines and directives component of the planning process. The Society sees no problem with the legislation or regulations in this regard.

More specifically, the Wilderness Society states that the NFMA "clearly" mandates reforms of past Forest Service practices, which emphasized commodity production, especially timber, at the expense of other forest resource values and environmental quality; these reforms, it states, are established in "detailed standards" in the legislation and regulations. The Society asserts that the Forest Service has "misinterpreted or ignored the NFMA's mandate." The critique cites results from the forest plans and sections of the legislation and regulations to support its claims that instead of protecting and enhancing the productivity and benefits of all forest resources as mandated by NFMA, the agency continues to manage the national forests principally for commodity production, resulting in resource damage and taxpayer loss.

An example of the analytic style utilized in this critique involves the issue of timber resource land suitability. Section 6(k) of NFMA is quoted with regard to the limitations it places on designating suitable timberland. The intent of this section, in the Society's view, is the elimination of past Forest Service practices that included logging on physically and economically unsuitable lands. The analysis reasons that such limitations should result in the land suitability base being significantly lower than in the pre-NFMA era. However, the empirics show this base is reduced by less than one-half of one percent, nationwide (table 1). The analysis further asserts that these results indicate that physically and economically unsuitable lands remain in the base.

The Wilderness Society also asserts that these unsuitable lands are being scheduled for development. For example, it considers the number of "below-cost forests"

(forests whose timber sale expenditures exceed receipts) an indication of excessive logging on uneconomic lands.

Other evaluation criteria used in the critique are more qualitative in nature, gleaned from the text of the law and regulations and the forest plans. For example, the Society cites the NFMA sections requiring commercial forest lands to be classified as unsuitable for timber production if the Forest Service cannot "insure" that their watersheds are protected from irreversible damage. Then, examples from the forest plans are cited that show the Forest Service relies mainly on "best management practices" (BMPs) and other mitigation techniques to prevent environmental damage. The Society asserts the Forest Service is not only deemphasizing the method of protection mandated by NFMA—taking unsuitable lands out of production—but is proposing methods that are either the same as those used prior to NFMA (i.e., BMPs) or are unproven and cannot "insure" environmental protection. Similar evaluations are applied to such controversial issues as biological diversity, clearcutting, and Forest Service rationalization for below-cost timber sales.

The Society also quotes Hubert Humphrey, a principal sponsor of the NFMA, and other congressional leaders in the debate over NFMA as to the central importance of protecting and enhancing noncommodity forest resource values. The basic conclusion of this critique is that the results of the forest plans do not conform with the intent of NFMA. The critique is limited to a reaction to the results of forest planning, without addressing the planning process or analyses per se. The recommendations do not call for specific outcomes but are broadly defined prescriptions for changing plan results so that a higher priority is assigned to the enhancement and protection of noncommodity forest resources and values.

The National Wildlife Federation and the American Forestry Association (1988) collaborated on a document expressing their shared views on the "current problems plaguing the management of the National Forest System...." The National Wildlife Federation and the American Forestry Association are nonprofit conserva-

Table 1.—Summary of Forest Service land classifications in forest plans.

Forest Service Region	Land classification		Change from commercial to suitable in NFMA plans	
	Commercial forest land (pre-NFMA)	Suitable for timber production (NFMA plans)		
	----- Thousands of acres -----			Percent
Northern	8,676	9,074	+ 398	+ 4.6
Rocky Mountain	4,185	5,068	+ 883	+ 21.1
Southwestern	3,935	3,721	- 214	- 5.4
Southern	8,653	9,106	+ 453	+ 5.2
Eastern	8,598	6,472	- 2,126	- 24.7
Alaska	1,071	968	- 103	- 9.6
Intermountain	3,239	3,463	+ 224	+ 6.9
Pacific Southwest	4,250	5,158	+ 908	+ 21.4
Pacific Northwest	4,971	4,339	- 632	- 12.7
Total	47,578	47,369	- 209	- 0.4



tion education organizations dedicated to the advancement of "intelligent" management, use, and protection of all natural resources.

In this report, these organizations suggest the planning process has failed because it has not solved controversies but has "simply provided a new arena for fighting them out." They list a range of problems they see as the root of most controversies. The problems are essentially results oriented, particularly with respect to timber production. In their view, the underlying problem is formulated as a simple question, "...how, and for what, are the National Forests to be managed?" They suggest most of the public would answer that the national forests should "be managed with whatever mix of products, services, and public uses that is least available from the private lands and other public lands of the region, seeking the balance that makes them truly different." They argue that this answer is representative of a shift in how the public values the attributes of the national forests. In identifying the reasons for this change the report states,

These changing perceptions about the values of the National Forest System arise from the fact that the resources which are most scarce, and most valuable today, are essentially different from what was scarce and valuable in the past.

The inference is drawn that the commodity production opportunities and capabilities of our nationwide natural resource base are relatively abundant and even expanding compared with attributes such as biologically diverse ecosystems, which are decreasing and essentially only available on national public resource lands. These organizations assert that new goals for the National Forest System and a new mission for the Forest Service that are responsive to these changes and growing values must be clearly defined. This is the essence of the debate about national forest planning as framed by these two organizations, and they go on to list some questions concerning the roles of the National Forest System, the Forest Service, Congress, and the various publics in order to stimulate the debate.

H. Michael Anderson (1987) addresses the impact on the Forest Service planning process of an increasing public concern for water quality and recent national water quality legislation. Anderson is a forest planning specialist with the Wilderness Society. Anderson cites a poll of public attitudes about national forest uses that indicates water quality protection may be considered the single most important use. He describes the antidegradation requirements mandated under the Clean Water Act (CWA). The EPA and state governments were assigned authority to apply CWA standards and are now taking initial steps to implement that process. Anderson asserts that the Forest Service planning process is not consistent with the new requirements. He argues that the current planning process results in the establishment of logging and other commodity targets while water quality protection is addressed with BMPs. However, the standards of CWA represent water quality targets to be met, not damage to be mitigated. Thus, Anderson argues,

the Forest Service must revise its planning principles and procedures to treat water quality as a target required by law. He states, "...the traditional rules of water quality protection and commodity development have been fundamentally reversed."

Although case law and legal clarification have yet to establish the final implementation process for CWA, Anderson recommends that the Forest Service take the initiative to work with state governments and the EPA to develop standards and monitoring systems for national forest lands and to identify specific national forest waters and fisheries needing immediate protection or restoration. He suggests that specific provisions resulting from this collaboration should be integrated into the NFMA planning process principles and procedures.

William E. Shands (1986) expresses his opinions about the strengths, weaknesses, and limits to the RPA Program, Assessments, and Annual Reports and makes some recommendations for improvements. Shands is a senior associate with the Conservation Foundation who specializes in forest policy. Shands bases much of his evaluation of the RPA process and its components on interviews with a cross section of the relevant constituency. Results from the interviews suggest planning is generally supported and the RPA documents are considered useful. Major criticisms involve (1) the discrepancy between RPA targets and Forest Service budgets, (2) program complexity, and (3) the neglect of contemporary issues. Shands emphasizes that it was not the intent of RPA to commit Congress or the administration to program targets. He also suggests that the problems articulated reflect tensions that are healthy for a dynamic planning process, and he cautions against expecting purely rational decisions when RPA is essentially a political process.

Shands recommends that each 5-year program be designed as a strategic plan encompassing a view of both short-term and future issues. He urges a stronger connection to "larger socioeconomic and environmental issues." Shands suggests that future assessments use the 1984 supplement as a model, with the added refinements of consolidating the discussion by resource category and adding an executive summary. Finally, the author recommends incorporating the annual report in the process as an extension to the strategic strategy—an annual update of the program according to changing conditions and needs.

M. Brock Evans and Connie M. Mahar (1982) discuss departures from sustained yield from a conservationist's perspective. They are vice president and assistant to the vice president for national issues, respectively, with the National Audubon Society. In their discussion of departures from sustained yield, Evans and Mahar focus on congressional intent and the results of departures. The authors assert that departures were intended to be "aberrations" and not the norm. They view the present departures question as an old-growth issue, charging that departures have turned into a vehicle for eliminating old growth for short-term economic gain. Evans and Mahar present a scenario depicting scheduled departure programs as indicative of the shifting of the burden of proof



Table 2.— Comparison of RPA alternative with proposed alternatives, Region 2 (August 1986).

Decade	Board feet			Cubic feet		
	RPA	Proposed	Percent	RPA	Proposed	Percent
Decade 1	514.05	437.23	-14.9	118.75	102.51	-13.7
Decade 2	568.58	489.85	-13.8	131.73	114.79	-12.9
Decade 3	579.98	517.65	-10.7	134.39	121.21	-9.9
Decade 4	603.93	551.30	-8.7	139.49	128.98	-7.5
Decade 5	630.48	579.60	-8.1	145.83	135.51	-7.1

in a way that Congress did not intend. They also imply that the timber land suitability provisions of NFMA are violated by current departure policies. Evans and Mahar then outline the multiple-use benefits of old-growth forests and the adverse impacts resulting from their liquidation. They argue old-growth forests are nonrenewable and are important resources in and of themselves.

### Timber Industry

The views of the National Forest Products Association (NFPA) concerning NFMA and the planning process were prepared by its NFMA Oversight Task Group (1986)<sup>5</sup> and Mark Rey (1986), the Association's vice president of public forestry programs. The NFPA is a national trade association representing member forest landowners and managers and wood products manufacturers. The NFPA material is indicated to be a preliminary evaluation outlining the general problems with NFMA and the forest planning process; it does not link these problems with specific provisions of the Act or regulations and makes no official recommendations.

The main focus of the Association's critique are forest plan results that it asserts propose unjustified and "dramatically" reduced timber sale programs. Adverse implications cited include failure to meet national timber demand projections, loss of competitiveness for domestic producers dependent on federal timber, and economic instability for local timber-dependent communities. The critique also lists many other problems associated with reduced timber sales.

The NFPA asserts the intent of the Resources Planning Act of 1974 (RPA) is to assure a supply of commodity resource outputs adequate to meet national demand, and the NFMA amendment to RPA is intended to set individual forest target shares of national RPA goals. If these targets cannot be met, the forests are to explicitly indicate to Congress why. Furthermore, in NFPA's view, NFMA is a mandate authorizing the practice of even-age silviculture (clearcutting) to facilitate the achievement of national RPA goals. The NFPA bases its critique primarily on the failure of forest plans to meet RPA goals, and it presents empirical evidence using Forest Service data to show the discrepancy. For example, the proposed

sales schedules for Region 2 are shown to fall from 7 to 15 percent short of the RPA goals (table 2).

The NFPA extends its analysis to the consequences of reduced timber sales by equating the percentage decline in harvest levels with jobs and annual payments to counties lost. The NFPA supports its interpretation of original intent by quoting from the Senate testimony of John McGuire, then Chief of the Forest Service, endorsing the proposed NFMA legislation in terms of its relevance to present (historical) timber management practices and RPA harvest goals (Joint Hearings of Senate Committee on Agriculture and Forestry, Committee on Interior and Insular Affairs, March 16, 17, 22, 1976, p. 288-291).

Another central NFPA theme is that the NFMA objectives, as established in the law, regulations, and guidelines, are "vague and ambiguous" with respect to timber harvest and community stability but are more clearly defined for environmental standards. They assert that this discrepancy in transforming intent into the law and rules, along with a planning process that requires an interdisciplinary approach to forest planning, has resulted in a noncommodity bias in the forest plans. Another major weakness, in their view, is the lack of a clear link between national RPA goals and the planning process as carried out on individual forests. In particular, because the law and rules are not clear on the original intent of Congress, forests have not explained why RPA timber targets have not been met.

In NFPA's view, other perceived problem areas are as follows: (1) the procedures for setting management objectives and making decisions are confusing, unclear, and too broadly defined; (2) the public participation process is unclear and subject to abuse—opportunities for public review and comment on the intermediate planning steps and on policies formulated at the national office level are not made available or are ignored; (3) the analytical planning procedures are too complex, expensive, and time-consuming and the data base utilized is of questionable validity. A general NFPA conclusion is that a substantial number of the problems with NFMA arise because the regulations and guidelines are process-oriented instead of decision-oriented. No specific recommendations were included in the NFPA critique pending further study and consultation with membership.

John L. Walker (1983), representing the Simpson Timber Company of Seattle, Wash., prepared a critique of the NFMA planning process for presentation at a conference on critical policy issues in U.S. forestry. The critique involves an analysis of the economic efficiency criteria utilized in Forest Service planning.

<sup>5</sup>National Forest Products Association. *NFMA Oversight Task Group. 1986. Overview of problems with the NFMA planning process (unpublished paper—not for circulation). 16 p.*

Walker asserts that the Forest Service planning process is seriously flawed because the economic efficiency objective that congressional intent clearly called for has, in fact, been replaced by an irrational imposition of certain traditional Forest Service management constraints. In Walker's view, the correct economic efficiency objective would produce outputs consistent with the outcome of competitive markets. He discusses the theory of economic optimality in terms of the maximization of net social benefits and the central role interest rates and prices play in achieving this optimality. He further argues that this scenario represents the results of an efficient free market operation. Walker then charges that the Forest Service ignores the importance of interest rates and prices in establishing the requisite economic efficiency criteria for planning and that the agency's real objective continues to reflect the traditional emphasis on sustained yield and other harvest flow constraints. He describes the work of the interdisciplinary planning teams as negotiating the specifications of "preconceived" constraints, most notably the various harvest flow constraints (along with resource and land use allocations) before any alternatives are developed. He charges that, in this way, the Forest Service avoids considering the costs and benefits associated with the constraints. Walker suggests that the Forest Service can follow this procedure because of the ambiguities and inconsistencies in the legislation and regulations and also because of the broad discretion given the agency by these laws and rules. He also points out that while the Forest Service sets the output level through allowable cut constraints, it ignores price effects by assuming the stumpage demand curve for individual forests to be horizontal. Finally, Walker is critical of the analytical model (FORPLAN) used by the Forest Service. His general conclusion is that the major change in forest management and planning mandated by NFMA is that economic efficiency considerations now have priority over the traditional objectives concerning harvest flow constraints. He also asserts that the allowances for departures were instituted to permit this restructuring.

Ralph Peinecke (1982) argues that departure analysis should be made the "rule" in national forest planning rather than the "exception" it currently is. Peinecke is vice president of timberland resources for Boise Cascade Corporation. Peinecke draws a distinction between the concepts of sustained yield and nondeclining even flow yield. While sustained yield is law, he contends nondeclining flow is Forest Service policy that interprets the sustained yield law. In his view, the Forest Service has wide discretion in this interpretation with respect to departures from nondeclining flow. Peinecke evaluates the merits of departure analysis in terms of "the Forest Service's basic objectives of nondeclining even flow policy." He cites examples from forest industry practices, the economic literature, and national forest plans as evidence to support a conclusion that "nondeclining yield policy is neither necessary nor always sufficient to realize the objectives established for its implementation." A central theme running throughout Peinecke's analysis is the promise of technological

advancements in forestry and the opportunities lost by not fully utilizing our technological capabilities through departures. He calls for regulations that put more emphasis on departure programs and a more rational political process within which such decisions can be made.

### Professional Forestry Societies

In its report, the Renewable Resources Planning Act Task Force of the Society of American Foresters (1987) outlines several specific recommendations for changes in the RPA process and law. Although the Task Force views the results of RPA planning to date as flawed, it believes the planning process as originally intended is a valuable exercise and it is "essential" that it be made to work. The following is a characterization of some of the more substantive changes in the existing planning process framework that the Task Force believes will result in more effective future RPA Programs.

1. The Program must respond directly to the Assessment findings. Budgetary considerations should not shape the Program. The Program can then be used as a baseline case for analyzing the effects of alternative budget levels.
2. An accounting system should be developed that would track the expenditures for each Program element.
3. The Annual Report of the Chief should become a principle planning document. Its function should be to describe the consequences of deviations from the budget necessary to meet the goals and targets of the recommended Program and forest plans.
4. Alternative Programs, each responsive to the Assessment but favoring different combinations of outputs, should be developed to further enhance a trade-off analysis that would be framed in terms of both budget levels and types of outputs.
5. The Assessment should be less textual and more graphic.
6. The role of economic analysis should continue to be enhanced in the process.
7. Forestry professionals outside the agency should have a larger role in program document development and technical review. This would improve the quality and credibility of RPA documents and also increase the commitment of the professional forestry and conservation community to the RPA process.

These recommendations have been adopted as the official position of the Society of American Foresters.

### Natural Resource Consultants

The unavoidable political and institutional influences on the RPA/NFMA planning process are discussed by Cortner and Richards (1983a), Cortner and Schweitzer (1981, 1983b, 1983c), and Schweitzer et al. (1984). They also discuss why and how these should be integrated into



the objective/technical legal mandate for forest planning. Hanna Cortner, formerly a natural resource policy specialist with George Banzhaf and Co. in Tucson and adjunct associate professor, School of Renewable Natural Resources, University of Arizona, Tucson, collaborated with Dennis Schweitzer, an economist with the USDA Forest Service, and others. Their papers review the general literature concerning administrative and organizational behavior with respect to planning.

Cortner and Schweitzer describe RPA/NFMA as "the most complete statement of a fully rationalistic planning process available." They then describe the decision-making process in the "real-world" as significantly influenced by (nonobjective) value judgments because the "scientifically validated, empirical knowledge base underlying forest planning is typically, rather than exceptionally inadequate." In their view, the diversity of values competing to facilitate the analysis and influence the results makes forest planning "fundamentally a political process that defines winners and losers rather than simply a technical enterprise to define truth...." They caution that an insufficient awareness of this political aspect of planning and the constraints it imposes on the analysis and expected results will lead to a failure of the planning process.

Cortner and Schweitzer do not make any specific recommendations, but they present some generalized concepts depicting how greater awareness of the political aspect of the planning process could increase the chances for improving forest management. For example, they point out the pitfalls of the present public participation process that result from its procedural and technique orientation. They assert that an approach emphasizing the negotiation of mutually acceptable trade-offs between publics would have a greater chance of producing results acceptable to all interested parties (thus reducing the probability of costly litigation and remanded plans). Accordingly, this approach would require greater knowledge of political concepts and skills on the part of the Forest Service's planning personnel. Cortner and Schweitzer argue further that the "centralized rationality" of RPA/NFMA necessitates "political adjustments" within the agency. This critique may be summarized by their statement,

If not explicitly recognized, the lack of a fit between the theoretical model and the type of RPA plan that is realistically possible to present to the public can lead to a distrust of all planning. Then the goals of public national planning for forest resources will remain elusive and its accomplishments ephemeral.

Randal O'Toole (1988) posits that prescriptive legislation such as RPA/NFMA treats the symptoms of management inefficiencies and environmental degradation and not the causes. Thus, he concludes, they are bound to fail. He suggests that a "radical rethinking of traditional environmental concepts" is required. O'Toole is the director of Cascade Holistic Economic Consultants (CHEC), a nonprofit forestry consulting firm. O'Toole explicitly asserts that it is a common human condition to act according to monetary incentives. Therefore, he sug-

gests it should not be surprising that the Forest Service is first and foremost a budget maximizer. O'Toole insists the only way to modify this behavior is to change the incentives and, by definition, the economic paradigm under which the Forest Service operates. His recommendation is to "marketize" the Forest Service; that is, while the agency would remain a publicly owned institution, it would resemble a private sector business in many other respects, although special treatment is suggested for such areas as wilderness and threatened and endangered species. The agency would be divorced from congressional appropriations and dependent on revenues resulting from satisfying the multiresource public demands at fair market value prices. Furthermore, the system and program would be decentralized. O'Toole argues that this could be accomplished with a single legislative action and that the public would benefit in terms of tax savings, environmental quality, and the satisfaction of all its resource demands.

### Public Policy Research Organizations

The Office of Technology Assessment (OTA), the research branch of Congress, prepared a report (U.S. Congress 1987) on the loss of earth's biological diversity and the policy options for addressing this issue. An examination of the role of planning and management on the National Forest System is included in this assessment of technologies for maintaining biological diversity in the United States and worldwide. The professional experience and knowledge of biological, physical, and social scientists from the public and private sectors were utilized through technical work groups, grassroots workshops, and commissioned papers in the development of this study. A review of the scientific literature also provided input. OTA concludes that "a comprehensive approach is needed to arrest the loss of biological diversity" and "current technologies are insufficient to prevent further erosion of biological resources." The report also concludes that deficiencies exist in the areas of public awareness and understanding, funding, personnel, and databases.

OTA asserts that a comprehensive approach requires the maintenance of biological diversity as an "explicit" objective. However, "No federal law specifically mandates the maintenance of biological diversity...as a national goal." A distinction is drawn between technologies to maintain diversity at the "ecosystem" level—the level required under a comprehensive approach as defined by OTA—and the "species management" based technologies used by the Forest Service and other agencies for maintaining biological diversity. Another major criticism focuses on the perceived failure of federal agencies to conduct the "site surveys" OTA considers necessary for planning for diversity at the ecosystem level.

Major recommendations include (1) amending legislation to make maintenance of biological diversity an "explicit" goal of federal agencies; (2) focusing diversity research on technology development and expanding its



scope beyond particular populations or species and economically important organisms; and (3) consolidating all existing and future data on the status and trends of biological diversity.

In a paper prepared for presentation at a conference concerning critical policy issues in U.S. forestry, Resources for the Future (RFF) scientists John V. Krutilla, Michael D. Bowes, and Elizabeth A. Wilman (1983) evaluate the performance of Forest Service planning to date. Resources for the Future, Inc., is a nonprofit organization working to advance research and education in the development, conservation, and use of natural resources, including the quality of the environment. These scientists interpret the intent of NFMA as a mandate to manage the National Forest System lands as an "economic asset" with an objective function of maximizing net social benefits; these benefits would be measured in monetary terms and forest management would be subject to specified constraints relating to certain nonmarket resource outputs and services required under multiple-use legislation. The authors view the regulations as being consistent with these economic efficiency and multiple-use constraint criteria. Furthermore, after reviewing numerous completed forest plans, they conclude that the procedures used in plan development also are consistent with both the legislative intent and regulatory acknowledgment of this intent. They caution, however, that their review provides only "indirect" evidence of compliance with intent. While the requisite overall economic approach could be confirmed, judging the quality of the data representing costs and benefits, the acceptability of constraint levels, and the accuracy of all functional relationships is regarded as being beyond reviewer competence when considered in terms of original intent.

Ignoring questions of intent, Krutilla, Bowes, and Wilman identify opportunities for improvements in the procedures and techniques used to define the forest production and demand functions. They present alternative approaches that reflect basic research accomplishments by both Forest Service scientists and others working in the areas of management science and economics. On the supply side, they suggest an iterative approach utilizing simulation modeling in concert with the sensitivity analysis capabilities of linear programming techniques to address the problem of selecting a set of prescriptions representative of an optimal land allocation pattern. They assert that the demand side should receive the highest priority for further research because the theory is less developed and the problem more complex. They cite developments in hedonic/travel cost models and the contingent valuation method as promising starting points.

Regarding the so-called joint cost allocation problem, the authors argue that costing prescriptions rather than outputs makes this a "false" issue. Finally, the critical importance of the budgeting/appropriations process to achieving the goals of forest planning is emphasized. Krutilla, Bowes, and Wilman argue for a more definitive analytical link between the range of alternative prescriptions and plans and possible budget levels. Specifically,

the planning process on each forest should result in the development of a wide range of alternative prescriptions and plans representing a diverse mix of practices and outputs for any given budget level. In general, the view of these RFF analysts is that the planning process as it is presently structured is working well and, with the necessary research, its value for resource management should continue to increase.

Charles E. Hewett (1982) discusses the need to "identify new opportunities and concrete initiatives that can be undertaken to improve the effectiveness of the RPA process." Hewett is the director of the program in forest resource policy at Dartmouth College's Resource Policy Center. In this capacity he has acted as a principal organizer of the annual Dartmouth Symposium on Renewable Resources.

Hewett incorporates the recommendations of the working groups of the 1980 Symposium into a set of "action priorities" for improving the effectiveness of RPA activities. These priorities are classified under three major headings:

1. Improving the effectiveness of the RPA in the decisionmaking process
2. Achieving consensus and compromise
3. Improving issue recognition and assessment in the RPA.

The priorities under the first heading involve the assessment of national social, economic, and environmental consequences of alternative policy approaches to critical natural resource issues and the need to frequently and concisely present the results of these assessments to policy makers. The priorities under the second heading involve the identification and emphasis of the common goals of diverse interest groups in the RPA process and the building of coalitions of support to replace present approaches that most often result in damaging debate. The last set of priorities deals with the enhancement of the ability within RPA to recognize and analyze new issues.

Adela Backiel (1987) takes a broader view than Johnson and Sessions (1987)(reviewed below) of the limitations of the Forest Service planning process in addressing the below-cost timber sale (BCTS) issue. Backiel is an analyst in natural resources policy at the Congressional Research Service, Library of Congress, Washington, D.C. She concludes that the technical planning procedures in the planning process will be useless in solving the BCTS problem unless certain basic data and budgeting questions are addressed first.

### Academia

In a paper prepared as part of a public information and education project conducted by the Conservation Foundation, Sally K. Fairfax (1981), then assistant professor in the College of Natural Resources at the University of California in Berkeley, predicts that "major adverse change" in the Forest Service will result from the RPA/NFMA laws.



While Fairfax focuses on specific principles and procedures of the NFMA planning process and describes their impacts on the Forest Service as an institution, an underlying theme of her paper is that intervention from higher governmental sources is reducing the effectiveness of the agency. Historically, the Forest Service is viewed by the author as being "uniquely successful at managing and protecting the forests." In referring to the cumulative effects of the environmental legislation passed over the past three decades on this historical performance, Fairfax states, "The tradition of land stewardship, if indeed it survived the 1950s and 1960s, may have died in the 1970s."

As for the NFMA planning procedures, Fairfax argues they are unworkable and would result in plans that would be useless for any meaningful management of resources on the ground. Fairfax states, "If the process... results in substantively 'good' decisions, it is a happy coincidence." The rationale for these assertions is the premise that Forest Service personnel are now forced to "focus their efforts on managing a process and will manage the land only as a secondary or derived activity." In her view, the initiative of experienced land managers for making technical decisions has been transferred to lawyers, computer specialists, economists, and special interest groups—the land managers' time and efforts are now taken up by insuring correct procedures, gathering data, and acting as "brokers" to negotiate compromise among special interest groups. Fairfax charges that decisions on the ground will now be dictated by the results of a staff analysis negotiated with special interest groups. She concludes that much of the adverse change brought on the Forest Service by NFMA is the result of a change in direction from decentralized to centralized decisionmaking.

Richard W. Behan (1981, 1985), dean of the School of Forestry at Northern Arizona University in Flagstaff, advocates the repeal of RPA/NFMA. While Behan has high praise for the motives and the work of both professionals and interest groups who developed NFMA and the planning process, he suggests that in doing their particular jobs nobody anticipated the fundamental flaw of the final aggregate product. In his opinion, the flaw is that the plans are mandated by law. Behan goes on to explain that this law mandates a rational, completely objective planning process. However, such perfection is impossible in the real world. Because an "imperfect plan is an illegal plan" the inevitable result will be "forest management by court decisions, instead of the considered judgment of professional land managers."

Behan asserts that the essential and central aspect of efficient and correct resource management decisionmaking is the professional and experienced judgment of the land manager. He argues that this attribute will be neutralized or displaced completely by the statutory requirements for managers to concentrate on documentation, consistency, and correct procedures—even in cases where legal challenges and opinions do not enter the process.

Behan states that another related reason to repeal RPA/NFMA is the cost factor. He asserts that the plan-

ning process itself is not analyzed systematically in cost-benefit terms. Finally, Behan claims that while one of the major intents of Congress in passing RPA/NFMA was to insure adequate funding, the planning process has had minimal effect on Forest Service appropriations.

While Behan views RPA/NFMA as a costly mistake, he does recognize the need for a reshaping of public forest management. He is encouraged that three ingredients essential to a successful reform are currently in place. First, he notes the traditional Forest Service "can-do" attitude. Second, he observes a newly emerging sophistication on the part of the Forest Service with respect to integrating public concerns into land management decisions. And third, he sees improvements on the part of special interest groups with respect to "their abilities to speak intelligently and even (sometimes anyway) objectively...." These three factors, in his view, provide a foundation for a flexible land management planning process based on professional experience and judgment and the resolution of controversies through bargaining, negotiation, and mediation unimpeded by statutory regulation.

Gerald M. Allen and Ernest M. Gould (1986) draw a distinction between "complex" and "wicked" problems with respect to public forests. Allen is a professor in the Department of Forestry at Humboldt State University in Arcata, Calif. Gould is assistant director and forest economist at the Harvard Forest in Petersham, Mass. Allen and Gould define "complex" problems in forestry as those well-suited to a systems analysis solution approach. Such problems are common in day-to-day tactical operations and are characterized as having either a right or wrong solution. In contrast, "wicked" problems never have a well-defined solution because of an inherent political component. Such problems do not lend themselves well to a systematic method of solution.

Allen and Gould assert that in formulating the rules for implementing the planning process mandated by NFMA, the Forest Service is "confusing complexity with wickedness." In their view, strategic planning is a "wicked" problem that cannot be dealt with successfully in a comprehensive, rational approach. They argue it is time to reevaluate the directives of NFMA and investigate alternative planning procedures. Although they present no specific recommendations, Allen and Gould emphasize incremental planning and the talents of forest managers as being central to any alternative approaches.

Dennis E. Teeguarden (1987), professor of forestry economics in the Department of Forestry and Resource Management at the University of California in Berkeley, discusses economic efficiency criteria with respect to congressional intent and practical use in national forest planning. Teeguarden acknowledges the clear intent of Congress that economic efficiency criteria be used in the development and evaluation of alternative forest plans and lauds their "wise" decision to be ambiguous as to the weight to be given this tool in the Forest Service planning process. He asserts that this ambiguity allows the Forest Service discretion in the use of economic efficiency criteria to reflect empirical limitations unique to forest



resource planning as well as the limitations associated with benefit-cost analysis. Furthermore, Teeguarden argues that public forest planning is essentially a political decisionmaking process in which distributional or equity criteria also play a major role.

Teeguarden describes the functional roles of benefit-cost analysis in the Forest Service planning process. These include (1) to provide and integrate quantifiable economic information; (2) to help mitigate extravagant claims by interest groups and promote compromise; and (3) to approximate economically efficient management activities and programs. Teeguarden recommends continued research to facilitate the application of these functions.

In response to doubts raised about the ability of NFMA to improve the rationality in the Forest Service planning process, Paul Mohai (1987) addresses the issue with an analytical and empirical approach. Mohai is an assistant professor in the School of Natural Resources at the University of Michigan in Ann Arbor. Mohai framed his analysis in the context of two questions: (1) "...if not rationality, what factors influence agency decisionmaking?" and (2) "...what advantage can planning be expected to achieve?" His approach to answering these questions consists of three distinct elements: a theoretical analysis based on the alternative models of government decisionmaking developed by Graham Allison; a review of the literature concerning Forest Service decisionmaking; and empirical results from the Forest Service's Second Roadless Area Review and Evaluation (RARE II). According to Mohai, evidence from these elements does not support the hypothesis that rational processes significantly influence Forest Service decisionmaking. Instead, institutional factors, such as tradition and resistance to change, and political considerations prove to be more significant. Furthermore, he indicates that changes instituted through the planning process are incremental in nature.

Mohai asserts, in answer to the second question, that legitimizing the "rules of the game" may be the most significant effect of RPA/NFMA. He argues that this legitimizing provides each actor in the planning process some measure of predictability and control, and this leads to a greater potential for compromise.

K. Norman Johnson and John Sessions (1987) address the ability of the Forest Service planning process to resolve the below-cost timber sales issue. Johnson is an associate professor of forest management and Sessions, a professor of forest engineering, at Oregon State University in Corvallis. Johnson and Sessions base their analysis on two fundamental tenets: (1) the goal of public forest management—the maximization of net public benefits (NPB)—can only be achieved through a level of planning that encompasses the whole forest; and (2) below-cost timber sales (BCTS) are defined in terms of a negative NPB. In assessing the ability of forest planning to at least identify BCTSs, the authors focus on two sub-issues: the determination of land suitable for timber production; and the examination of individual sales or areas in isolation from forest level planning. Johnson and Sessions suggest that much of the controversy surrounding BCTSs results

from a misunderstanding concerning the designation of "suitable" lands. The "economic suitability" of timber lands is determined in the FORPLAN analysis for each alternative. The land base that most efficiently meets the objectives and constraints of each alternative is declared "suitable." The objective is normally the maximization of present net value (PNV) while constraints are required as the only way to meet qualitative criteria. Within this analytical framework, it is possible for lands that have a negative PNV to be included in the suitable timber base if, in also considering the constraints, their beneficial impact on the forest-wide solution is positive. The authors see nothing inherently wrong in such an outcome and reject the notion that the BCTS issue should focus on a cash flow analysis with respect to PNV. They demonstrate how such a focus would compromise the ability of forest planning to identify the most cost-effective strategy for achieving forest-wide goals. Johnson and Sessions assert that forest level planning has the best potential as the vehicle for addressing the BCTS issue because it is theoretically designed to define the sales that most cost-effectively meet the objectives and constraints of the alternatives.

Charles F. Wilkinson and H. Michael Anderson (1987) have published one of the most exhaustive reviews of RPA as amended by NFMA to date. Wilkinson is a professor of law at the University of Colorado in Boulder and Anderson is a forest planning specialist with the Wilderness Society. The focus of this review by Wilkinson and Anderson is the interpretation of RPA/NFMA as Congress intended it. The authors document their review in great detail, analyze the legislative history behind the law, and delve into the statutes, regulations, manual provisions, draft plans, interdisciplinary committee proceedings, administrative reviews, and judicial interpretations. They also refer to numerous sources in the general literature on forest planning. In the process they draw comparisons between their interpretations and actual implementation.

An integral part of their analysis involves a review of the historic events that led to RPA and NFMA. The authors suggest the primary purpose of RPA was to improve funding but its most significant effect was its impact on the traditional autonomy of the Forest Service. They describe NFMA as a referendum on Forest Service timber practices that resulted for the first time in substantial restrictions on this autonomy. National plans were now required to be considered in local forest level planning decisions. This produced what Wilkinson and Anderson call "an uneasy compromise between... top-down and bottom-up" planning. However, they conclude that the ambiguous treatment by Congress of most of the issues addressed in the statutes has left the Forest Service with a considerable amount of its prior discretion. For example, Congress did not amend the section of the Organic Act that granted the Forest Service its basic authority to "regulate...occupancy and use...of lands and resources within the national forests."

Throughout the book, Wilkinson and Anderson compare the intent behind the statutes with the manner in which the Forest Service performs its delegated authority



and they cite numerous contrasts. For example, they point out that the suitability provisions in the NFMA regulations appear to be less restrictive than the requirements of NFMA itself. The authors also acknowledge the criticism of others with regard to the complexity, expense, and drain on human resources inherent in the NFMA planning process. More significantly, they contend a commodity bias still exists in the Forest Service. However, they state,

...we have come to appreciate the essential wisdom of the NFMA planning process. It creates valuable inventories, offers the potential of engaging the public and diverse disciplines, and holds out the promise of creating ordered and principled decisionmaking. Granted, these benefits will accrue over time, not instantly, and they will come at some cost, but we believe that the basic goals and process of the NFMA will prove out.

### USDA Forest Service

Con H. Schallau and Richard M. Alston (1987) comment on the community stability issue in national forest planning. Schallau is a research economist with the USDA Forest Service, Pacific Northwest Research Station in Corvallis, Oregon. Alston is a professor of economics at Weber State College in Ogden, Utah. Although neither RPA or NFMA directly address the issue of community stability, and theoretical support of the link between community stability and sustained yield timber policies is lacking, Schallau and Alston argue that this issue has a legitimate role in the Forest Service planning process. They base this assertion primarily on the history of Forest Service consideration of community stability and an interpretation of the concepts of "net public benefits" and "planning criteria" from NFMA and the regulations that would "implicitly allow" the consideration of community stability. Schallau and Alston concede that community stability should not be used to justify high levels of timber sales that cannot be justified for biological or economic reasons. However, the issue needs to be considered with respect to questions of equity—especially in cases where economic dislocation may result from Forest Service practices or programs. The authors argue that those affected should at least be informed.

In 1982 the Forest Service cosponsored a workshop "to identify the current state of information and the future needs to implement the NFMA provision for diversity on national forests...." The technical papers presented at this meeting (Cooley and Cooley 1984) reveal a wide range in methodologies utilized to incorporate diversity into the Forest Service planning process. This reflects both the ambiguity of congressional intent and the limited guidance from the Washington Office. While the reasons most often cited for incorporating diversity into the planning process varied, it was generally agreed that diversity was an important element. Some of the most substantive conclusions and recommendations resulting from the workshop are reproduced here,

categorized as either policy issues or procedural and technical issues.

#### Policy Issues:

1. Current direction in policy, regulations and planning guidance is adequate.
2. Diversity should be viewed as an effect, a consequence, of management, and not an end of management itself.
3. While the formalization of management practices in planning for diversity was considered an important goal, no consensus was reached concerning a way to institutionalize this concept.
4. There exists a need for clearer public perception of diversity and better methods for measuring this perception.
5. The preservation of ecosystems that are not represented or are underrepresented by current preservation strategies and the minimum area requirements of certain species will both require interagency cooperation.
6. More research is needed to improve methodologies for integrating diversity into the planning process.

#### Procedural Issues:

1. While it was generally agreed that the consideration of diversity in the planning process is adequate, consensus was elusive as to diversity measurement and temporal standards.
2. The forest planning documents need to more clearly display the depth of the analysis carried out.
3. Cultural and archeological resources need additional consideration.

In 1984 the Forest Service held a workshop to consider the changes in forest land inventory data needs brought about by the RPA/NFMA legislation and anticipated budgetary constraints. A primary objective of this workshop (Lund 1984) was to review the draft Forest Service manual concerning inventories used for developing forest plans, RPA Assessments, and Programs and to solicit additional recommendations from the Regions. Critical issues identified and addressed were resource inventory-planning relationships and information needs; design criteria; inventory direction, coordination, and responsibility; inventory budgeting; and data processing support.

In 1982 the Forest Service conducted a workshop on "Social Impact Analysis in the Forest Service" for the benefit of Forest Service social scientists. The objectives of this workshop were to review relevant sections of the Forest Service manual and explore ways to improve the practice of social impact analysis (SIA) in the Forest Service. The papers of Susan Giannettino (1982), Jean Schwabe (1982), and Gerald Williams (1982) represent the unique approaches to SIA that the management situation on their respective forests require. Giannettino stresses the importance of having a social scientist on the core planning team. She asserts that planning and management objectives should reflect not only biological and physical considerations, but also social acceptabil-



ity. In her view, core team membership is the surest way to achieve this. Schwabe describes SIA from the perspective of an urban forest where significant social impacts and effects have their origins beyond the forest boundaries and affect the forest. Conversely, Williams describes his perspective of the situation on a heavily timbered and harvested forest where the social impacts of concern are those generated by forest activities and programs that have social consequences for local and national publics.

David C. Iverson and Richard M. Alston (1986) trace the development of the analytical tools utilized by the Forest Service in response to land management planning requirements that have shifted the emphasis from functional to integrated interdisciplinary analysis. Iverson is the regional economist for the Intermountain Region of the Forest Service. Alston is a professor of economics at Weber State College in Ogden, Utah. The focus of this review is on the authors' critical evaluation of the latest generation of models. Iverson and Alston describe the development of FORPLAN (actually FORPLAN Version 1) in terms of its capability and the NFMA-mandated requirement for integrated land-use planning. They view the major accomplishment of FORPLAN Version 1 to be its ability to trace multiple resource activities through time. However, they discuss problems with respect to model size and the generation of unreasonable timing choices. The authors suggest that while creative analysts could mitigate these problems, a more intractable problem was a perceived timber bias underlying the FORPLAN system. This perceived bias arose because the system's emphasis was on long-term timber harvest scheduling, while many planners were becoming more interested in specific multiresource allocation questions. According to the authors, these concerns and others led to the development of FORPLAN Version 2. A major advance in this system is the flexibility it affords in specifying activities and outputs across space and time. In Iverson and Alston's view, this advance extends the usefulness of modeling to all resources.

While Iverson and Alston believed a specific evaluation of FORPLAN Version 2 would have been premature, they do offer a critique of mathematical programming techniques in general. First, they remind the reader that linear models cannot handle nonlinear problems very well. Second, the potential for complexity is inherent in linear programming models. Finally, the authors caution, "Mathematical programming in general, and linear programming in particular, is most useful in understanding the nature of the problem, not in providing numbers representing the 'answer' to a problem." Iverson and Alston conclude that the benefits of modeling exceed the costs. They suggest the key to success is intelligent problem identification and model specification.

In a later paper, Alston and Iverson (1987) address the strengths and weaknesses of FORPLAN Version 2 more directly by applying the criteria Chappelle et al. (1976) utilized in a "devastating" critique of earlier forest planning models (Timber RAM and MUSYC). While their conclusions regarding the strengths of FORPLAN Version 2 are similar to those in their earlier paper, they are

more explicit concerning the weaknesses of the model. They focus on the pitfalls inherent in the areas of problem identification and the model's "analytical flexibility." Of particular concern are the substitution of "presumed facts" for professional judgment and the misuse or abuse of shadow price analysis. Underlying these concerns is the authors' conclusion that FORPLAN Version 2 is not designed to identify problems, nor is it able to "consider all linkages with the rest of the world simultaneously." Complicating these weaknesses is the computational complexity of the model and the uncertainty of technical assistance from a central agency support unit.

In 1986, the Forest Service sponsored two meetings pertaining to the Forest Planning system FORPLAN. The first was a national workshop that explored the lessons learned in the agency through the use of FORPLAN; the participants at this workshop were almost exclusively Forest Service personnel. The second was a symposium whose theme was an evaluation of FORPLAN; unlike the workshop, participants included numerous nonagency experts and members of interest groups, in addition to agency personnel. These external experts played the lead role in the evaluation, with background and supporting information being provided by agency experts. Proceedings of both of these meetings have been published (Bailey 1986, Hoekstra et al. 1987). Both proceedings contain useful information and recommendations on a number of subjects pertaining to National Forest planning, FORPLAN, and the agency's planning process. Kent et al. (1988) summarize these two proceedings and conclude,

Perhaps the most interesting conclusion to draw from this review is the consistency with which certain research problems were identified. This is especially interesting when the diversity of participants in the two meetings is considered. We group these problems into one of two categories, basic and applied, and then briefly identify some of the more important ones in each category. Important problems in the first category include:

1. A more complete characterization of the agency's overall planning process needs to be developed.
2. Once item 1 is completed, the role of forest planning and the role of analysis can be more clearly defined.
3. With the planning process and the role of forest planning characterized, attention can be turned to an identification of planning strategies (i.e., rational comprehensive vs. hierarchical) and the role of analysis in planning.
4. The choice of analysis tools must then be considered and new systems must be developed or existing ones modified as appropriate. Necessary linkages between systems must also be identified and developed. This work must take into consideration the need to better incorporate nontimber resources, spatial concerns, and uncertainty in planning analysis. Throughout all of these investigations, the need to make planning and



analysis understandable to interested parties both in and outside the agency must be kept in mind. Necessary linkages between different levels of planning must be developed and at all times the underlying goal of improving management and decisionmaking through planning must be kept in mind.

Among the more important applied problems are:

1. Critical data needs for planning and analysis must be identified and satisfied.
2. Our understanding both of how to implement plans and how to utilize the results of implementation to facilitate the next round of planning must be improved.
3. A better understanding of the implications of budget levels on planning must be developed.

While this paper has focused on problems with the first round of planning, it would be remiss not to point out that much has been accomplished. It is also clear that the problems surfaced during the two meetings are difficult and will be challenging to address. As is often the case, the difficult problems are the last to be resolved.

### State Resource Agencies

William C. Unkel (1985), a natural resource biologist with the California Department of Fish and Game, cites specific sections of the legislation, regulations, and Forest Service manuals; interprets their language; and concludes that these planning process components are consistent with natural diversity goals. Unkel asserts, however, that the Forest Service will need assistance in transforming intent into both forest plan results and outcomes on the ground because (1) many of the diversity provisions of NFMA and the regulations are "superficially" prescriptive; (2) there is no precedent for a Forest Service interpretation of diversity; and (3) the meaning of diversity is also scientifically ambiguous. He suggests that state and private natural heritage programs are often the source of the best available information on natural diversity and could best serve in this consulting role. Unkel also explains how the diversity mandate as it is interpreted in this article is legally enforceable through the "reasonableness" test.

### Legal Community

F. Kaid Benfield (1987), senior attorney with the National Resources Defense Council, examined Forest Service planning process compliance with the standards of the Administrative Procedures Act (APA) and the National Environmental Policy Act (NEPA). He addressed two specific issues: (1) the adequacy of the decisionmaking record under RPA; and (2) the sufficiency of the range of alternatives under NEPA. Case studies involving two forest plans reveal inconsistencies between planning units and general shortcomings with respect to both

acts. These shortcomings involve planning decisions that were not adequately supported or verified in the planning records, an unresponsiveness to public input, and an insufficient range of management options. Benfield concludes that the present Forest Service approach is legally vulnerable. He suggests that the appeal process be used to identify and correct mistakes and make planning actions between separate administrative units more consistent in order to avoid litigation.

W. Hugh O'Riordan and Scott W. Horngren (1987) claim that the Minimum Management Requirements (MMRs) in the Forest Service planning process violate the NFMA. O'Riordan is a partner in the law firm of Lindsay, Hart, Neil, Weigler. Horngren is a timber supply specialist for the Western Forest Industries Association and a law student at Northwestern School of Law at Lewis and Clark College. Throughout their critique of the MMRs in the planning process, O'Riordan and Horngren cite and interpret specific sections of the legislation, regulations, and internal guidelines and directives. They charge that the Forest Service considers the MMRs as "inflexible legal standards over which there is no discretion" and that the agency applies them as a common constraint across all forest plans and alternatives. Furthermore, O'Riordan and Horngren assert that the Forest Service established these protection rules without public participation, interdisciplinary analysis, or integrated planning, which is in violation of the process mandated under NFMA. They argue that the term "minimum management requirement" is not even found in NFMA. The authors conclude that while the Forest Service does have the discretionary authority to promulgate MMRs, the present ones are illegal, and any plan constrained by them must be revised or will be subject to legal challenge. O'Riordan and Horngren make several recommendations. They suggest that the Forest Service develop a new set of MMRs through the public participation, interdisciplinary analysis, and integrated planning requirements of APA and NFMA. They also assert that protection constraints should vary among alternatives. Finally, they believe the RPA Program should include resource protection goals as well as those for resource outputs.

James F. Morrison (1987) (a lawyer with the USDA Forest Service) asserts that below-cost timber sales (BCTS) have resulted from the failure of the Forest Service to effectively transform the original intent of Congress with respect to the determination of suitable timber lands as codified in Section 6(k) of the NFMA into the regulations and guidelines. Morrison interprets the economic efficiency provisions of Section 6(k) as requiring timber production to be profitable. That is, the present net value (PNV) of any harvest activity on a particular land parcel must be positive in order for that land to be considered "suitable" for timber production. He cites provisions of the legislation, congressional debate, and other sources to develop this argument. He suggests that the primary culprit in the BCTS issue is the nondeclining even flow constraint. In his view, the principal motivation behind harvest flow constraints is community stability. This prompts Morrison to question the legal-



ty of these constraints because community stability is not defined in NFMA as a multiple use objective. Morrison views Forest Service planning as an evolutionary process that should be responsive to new information and opportunities. He argues that BCTSs represent a significant, unanticipated result of the process that should evoke a reevaluation of goals and procedures. His recommendations include reducing harvest levels to coincide with those sustainable from a profitable land base and a reevaluation of harvest flow objectives.

### Conclusions

While the critiques reviewed in this paper are taken from a representative cross section of Forest Service publics, the reader cannot assume that all points of view or even all issues of concern are explicitly revealed. Such an outcome would require an exhaustive approach beyond the scope and feasibility of this literature review. However, this review does provide insights into which planning process aspects and issues elicit the greatest interest and which areas elicit the most agreement or disagreement. Rather than finding consensus, this review highlights the diversity of individuals and groups interested in the Forest Service planning process and their points of view. Consensus is limited to the conclusions that the planning process is very complex and costly and that it contains a significant political component. Some generalized findings from this review include the following:

1. Positions taken by different types of groups are sometimes surprisingly compatible.
2. Contrasting points of view are sometimes held by similar groups.
3. The differences between disparate groups can be extreme and seemingly irreconcilable.
4. Positions within the same group or between groups with similar interests display the most agreement.
5. Conflicting conclusions are often drawn from similar, seemingly objective analyses.
6. Similar conclusions are sometimes derived based on different rationales.

Perhaps the most useful revelation of this review involves the identification of land management planning on the National Forest System as essentially a political process. This has been a persistent theme in the critiques of the USDA Forest Service land management planning process since RPA and NFMA became law. In one of the first organized critiques of RPA/NFMA planning, Parry (1983) views the consideration of methodological issues as inseparable from discussion of the political environment. In a recent paper that examined the role of distributive and allocative efficiency measures in the RPA/NFMA planning process, Alston and Iverson (1988) conclude that in the final analysis "the focus must be on mutual accommodation, compromise, political negotiation, and qualitative decision processes."<sup>6</sup>

<sup>6</sup>Alston, Richard M.; Iverson, David C. 1988. *An economic interpretation of net public benefits in forestry*. In process.

Despite this emphasis on political feasibility, it appears that political considerations may not be adequately specified in the planning process. While a case can be made that the requirements for public involvement and the identification of public issues were instituted to address the political component of planning, Dale J. Blahna and Susan Yonts-Shepard (1987) suggest that a 1986 Forest Service study of the use of public involvement in forest planning shows that "while the forests conducted formal issue identification procedures, often the issues as identified were not useful for developing most Forest Plans." They go on to assert,

The major problem with...[Forest Service] comment analysis methods was that information that was important to planning was lost in the process....At each step, the Forests have tended to react to the public issues rather than working proactively to obtain consensus before they escalated into full-fledged conflicts.

Blahna and Yonts-Shepard cite the large number of current and expected appeals as evidence of this conflict and of the ineffectiveness of the Forest Service in linking public issues and the analysis process in developing planning alternatives. Finally, the authors recommend an "issue management" approach to public involvement that would require a more detailed specification and description of the issues incorporating "the criteria of opposing parties" and the application of conflict resolution and integrative problem-solving techniques and skills.

In a similar analysis, Julia Wondolleck (1988a, 1988b) further develops the argument that the current public involvement process promotes conflict rather than compromise. Wondolleck outlines in detail conflict management concepts she believes could result in successful decisionmaking in the sense that, "Whereas it is unlikely that there will ever be technically discernable 'correct' solutions to today's forest management trade-offs, there can be solutions that will be accepted and supported by affected interests." Wondolleck reinforces her recommendations with documented examples of successful Forest Service experimentation with dispute resolution techniques.

These results suggest that the efforts of a Forest Service critique might best be directed at examining the diversity in publics, issues, and views involved in the planning process in the context of the "political feasibility" of the decisionmaking process.<sup>7</sup> The question to be investigated would then be, How can political considerations be integrated into the technical and procedural aspects of the planning process in a way that addresses the problems arising from the inherent diversity of values represented in the planning issues and criticisms? An examination of the potential role of conflict resolution concepts could be a point of departure in such an approach.

<sup>7</sup>Attempting to define a consensus based on a terse treatment of the currently available critiques could suffer from the same kind of loss of information that Blahna and Yonts-Shepard describe in their critique of the current Forest Service comment analysis methods.



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## Rocky Mountain Forest and Range Experiment Station

The Rocky Mountain Station is one of eight regional experiment stations, plus the Forest Products Laboratory and the Washington Office Staff, that make up the Forest Service research organization.

### RESEARCH FOCUS

Research programs at the Rocky Mountain Station are coordinated with area universities and with other institutions. Many studies are conducted on a cooperative basis to accelerate solutions to problems involving range, water, wildlife and fish habitat, human and community development, timber, recreation, protection, and multiresource evaluation.

### RESEARCH LOCATIONS

Research Work Units of the Rocky Mountain Station are operated in cooperation with universities in the following cities:

Albuquerque, New Mexico  
Flagstaff, Arizona  
Fort Collins, Colorado\*  
Laramie, Wyoming  
Lincoln, Nebraska  
Rapid City, South Dakota  
Tempe, Arizona

\*Station Headquarters: 240 W. Prospect St., Fort Collins, CO 80526